Position Paper On The Methodologies And Considerations Regarding Loss Reserve Discounting

By The CAS Committee
On Reserves

A DISCUSSION PAPER

BY THE COMMITTEE ON RESERVES

POSITION PAPER ON THE METHODOLOGIES AND CONSIDERATIONS REGARDING LOSS RESERVE DISCOUNTING

The appropriateness of discounting loss reserves for property and casualty insurance company financial statements has been discussed and debated in many forums over the years. The insurance industry, insurance regulators, legislators, insurance accountants and actuaries have all contributed to the evaluation of this controversial issue. However, there are technical aspects of recognizing the time value of money that may not be well understood by all those involved in the implementation of loss reserve discounting.

The purpose of this paper is to describe and discuss the methodologies and considerations pertaining to loss reserve discounting. The broader issue of the appropriateness of discounting is not addressed in this paper. Instead, this statement of the Casualty Actuarial Society's Committee on Reserves is a discussion of the technical and theoretical considerations underlying the process given that discounting is deemed appropriate.

In most circumstances, the reserve discounting process is largely determined by the underlying loss reserve evaluation process and the governing accounting principles. The discounting issues surrounding the different reserve evaluation techniques and accounting contexts will thus be discussed. It is assumed that the reader of this paper is familiar with

the Committee on Reserves' "Statement of Principles Regarding Property and Casualty Loss and Loss Adjustment Expense Reserves" and has a general understanding of statutory and generally accepted accounting principles for property and casualty insurance entities.

This paper consists of two sections:

I. Definitions

II. Methodologies and Considerations

Section II is further divided into four subsections:

A. Ultimate Payment Values

B. Payment Timing

C. Interest Rates for Discounting

D. Other Considerations

SECTION I - DEFINITIONS

The definitions in this section are specific to the discounting process. Definitions pertaining to loss reserve evaluations, which are contained in the previously referenced Statement of Principles on Loss Reserves, are not included here but are assumed to be understood by the reader.

A full value reserve is defined as a provision for the payment of outstanding claims at the anticipated future settlement amount. A full value reserve reflects future inflation as it may affect unpaid claim amounts. It does not reflect the time value of money.

A discounted reserve is defined as a full value reserve reduced

for future investment income earnings that can be generated by funds held between the date of the valuation and the date of the final payment on outstanding claims. A discounted reserve is thus a full value reserve adjusted to reflect the time value of money.

In discussing discounted reserves, there are two general types of investment yields or interest rates that arise. One is the market interest rate, which corresponds to the possible yield on new money invested in the current market. Such an interest rate is therefore dependent on the current performance of the selected security(ies). The other is the portfolio interest rate, which corresponds to the average yield on an existing investment portfolio.

Consideration of investment yields for discounting purposes also gives rise to two additional categories of risk. One is investment risk, which corresponds to the uncertainty surrounding the realization of a specified investment income stream. Two elements of the investment risk include uncertain investment yields and uncertain investment liquidity.

The other category of risk is default risk. This corresponds to the possibility of a complete and total loss on a chosen investment security.

SECTION II - METHODOLOGIES AND CONSIDERATIONS

Typically, the loss reserve discounting process follows these steps:

- Estimate the full value reserves for the group of claims under consideration as of the specified valuation date.

- Estimate the future loss payout patterns for the same group of claims.

- Apportion the full value reserves to the future payment periods using the estimated payout patterns.

- Determine an appropriate discounting rate of return.

- Calculate the present value, as of the valuation date, of the projected payments for each future payment period using the selected discounting rate of return.

- Cumulate the present value payments for all future payment periods.

There are, of course, many variations on this discounting process. In fact, the initial calculation of a full value reserve is not always necessary. Even so, the process can appear deceptively simple. A detailed analysis of each of the steps described above indicates that the process can be much more complex, depending on the volatility of the lines of business and the accounting context.

The most critical issues concerning the discounting process are discussed in the following four subsections.

A. Ultimate Payment Values

The calculation of a discounted reserve usually involves, as a starting point, an estimate of the full value reserve. The reader is referred to the previously mentioned Statement of Principles for a discussion of the principles and considerations involved in evaluating full value reserves. The same principles and considerations would apply to the calculation of a full value reserve which will form the basis of a discounted reserve.

The reserve provision finally recommended by an actuary will frequently be selected after a review of the results of several different reserving techniques. When a full value reserve is the sole objective, the aggregate reserve amount is of primary importance. When a full value reserve is to be used as the starting point for the calculation of a discounted reserve, the selection of the reserve provision by its component parts (e.g., accident year) may have a material effect on the amount of reserve discounting. Special attention should be paid to the projections by component in this instance.

The actuary calculating the discounted reserve provision should be fully aware of the assumptions and considerations underlying the selection of the full value reserve. Many of these assumptions and considerations may have a material effect on the

determination of the expected payment pattern. The selection of the payment pattern should be consistent with the selection of the full value reserve, to the extent that the key assumptions can be identified and their effect quantified. This point is discussed in further detail in the Payment Timing subsection.

While many of the same principles and considerations of reserve evaluation apply to both full value and discounted reserves, the materiality of those considerations may differ significantly. For example, the selection of a development factor for estimated development at an advanced maturity (i.e., a "tail factor") may be very significant in the determination of a full value reserve but may not be nearly as significant for a discounted reserve. On the other hand, a change in the settlement rate of claims may not materially affect the amount of a full value reserve, but could be important in the calculation of a discounted reserve. To the extent that the materiality of a reserve consideration determines the amount of analysis that item receives, the evaluation of a discounted reserve may require a change in emphasis on the items analyzed.

The accounting treatment of reserves where discounting is permitted frequently requires the disclosure of the amount of discounting; i.e., the amount of difference between the full value and the discounted

reserves. Where disclosure is not required, it is recommended that such a disclosure still be included, as it permits the use of financial evaluation ratios or other indicators which traditionally use non-discounted reserve amounts.

Although most discounted reserves are calculated from an initial full value reserve, there are instances where this is not the case. For example, some discounted reserves are calculated using an assumed difference between future claim cost trend and future interest rates. In this case, a meaningful disclosure may require that the reserve method and assumptions be identified and a representative interest rate be used to calculate a full value reserve, for illustrative purposes.

B. Payment Timing

To determine the timing of the loss and loss adjustment expense payments for an insurance enterprise, the entity's own historical payment data should be used to the extent that credible data is available. If necessary, this data should be supplemented by appropriate data from a broader source, such as insurance industry composites. Any such supplementary data should reflect the payment timing characteristics of the category of business under consideration; i.e., the data should be drawn from the same line (or

sub-line) of business and policy type (e.g., claims-made vs. occurrence, primary vs. excess, etc.) to the extent possible.

The data used in the estimation of payment timing should comprise several exposure periods and evaluation dates. Ideally, a complete development triangle of payment data should be evaluated. Specific techniques for estimating payment timing from this data include, for example:

- determining payment development factors directly from the triangle and deriving a pattern by inverting the resulting paid-to-ultimate development factors; and

- calculating a triangle of paid-to-ultimate ratios from the payment triangle and selecting a payment pattern by examination of these ratios by exposure period.

Methods such as these that use triangular data are less subject to distortion than cross-sectional methods that use only a single payment valuation date to derive a payment pattern.

In many situations, publicly available data, e.g., statutory annual statement data, may be the source of the payment timing experience. The actuary should be aware of the limitations of such data in selecting a loss payment pattern for discounting purposes.

As indicated before, the loss payment timing estimates should be reconcilable to the estimates of ultimate amounts to be paid even if these latter estimates have not been derived by techniques based on paid losses. Of particular importance is the allocation of the amount of reserve discount to exposure period. Such distribution is dependent on the allocation of the full value reserve. The actuary should determine if the resulting reserve discount allocation is consistent with that implied by the payment timing estimates.

It is possible that future loss payments could be subject to influences not present during the period when historical data is available. The actuary should determine whether this might be the case. Estimates of payment timing should reflect conditions (both internal and external) expected to prevail during the future payment period. If such conditions are different from those prevailing during the historical evaluation periods, attempts should be made to adjust the payment timing indications from the historical data.

Payment timing information should be examined periodically as data becomes available. Should information become available that would cause a material change in the estimated timing of payments for a particular category of business, the change should be reflected immediately.

The actuary should determine whether optimal payment timing estimates would be obtained by treating losses, allocated loss adjustment expenses and unallocated loss adjustment expenses separately or in some combination. This determination typically is influenced by the nature of the available data.

In estimating discounted loss reserves on a basis net of ceded reinsurance, the timing of the expected reinsurance recoveries should be considered. In particular, it should be determined whether the timing of such recoveries will affect the entity's investment income on its net business and thus its discounted net reserves. Adjustments to the amount of reserve discount should be made as necessary.

Special consideration should be given to loss payments which will be made according to a fixed schedule, such as structured settlements and workers' compensation lifetime benefit cases. If the volume of such cases is significant, separate treatment of fixed schedule claims may be appropriate.

In evaluating the timing of loss payments, a range of reasonable payout patterns may become evident. In selecting from within the range, the actuary should consider the volatility of the line of business and the investment risk. Further, consideration should be given to the purpose of the discounted reserve within the specific financial reporting context.

C. Interest Rates for Discounting

Since the amount of reserve discount depends heavily upon the interest rate used in discounting the expected loss payments, the rate must be chosen carefully. Because the insurer's actual asset portfolio will usually involve various types of risk (specified below), the interest rate should be based upon a hypothetical asset which negates these risks. Several elements must be considered:

1. Since interest rates vary through time, the actuary must select an interest rate consistent with the reserve evaluation date. Generally, a market rate is preferable to a portfolio (based on amortized value) rate. This is because the economic value of a loss reserve is its worth in exchange, through reinsurance or some other medium. In such a case, the appropriate interest rate is one for which a cash amount could be invested at the evaluation date to exactly liquidate the future loss payments as they become due. Further, the actuary should determine whether the existing assets could be converted to sufficient cash for this purpose.

2. The actuary should consider the duration of the expected loss payments measured from the evaluation date. Preferably, the term of the hypothetical investment security should match the average payment duration. Otherwise, the underlying

security's value would be insufficient to pay the losses if either interest rates dropped and the term to maturity was less than the loss duration, or if interest rates increased and the term was greater than the loss duration.

3. The actuary should recognize the possibility of default risk in the hypothetical investment security. In other words, if the losses are in fact paid out as expected, the invested assets set aside to fund the payments must accumulate to the desired amount. The only investment securities having no default risk are those issued or backed by the U.S. Government.

4. The effect of federal income taxes should be taken into account. If the discounted reserve is the same as that used for taxation, a pre-tax interest rate would be appropriate. If the discounted reserve for financial reporting differs from that used for taxation, the actuary should determine to what extent variance from a pre-tax interest rate may be appropriate.

5. The actuary may consider introducing an explicit risk adjustment to lower the interest rate. This would be done in order to protect against the possibility of adverse loss development or of earlier than anticipated loss payment. If the undiscounted reserve already includes such a margin, then an interest rate reduction may be

unnecessary. The risk adjustment should vary according to the payment volatility of the type of reserve being discounted, and would be particularly important in valuing reserves for a sale or acquisition.

To summarize, the interest rate chosen may bear no relationship to the investment practices of the insurer whose reserves are discounted. However, it should incorporate the insurer's actual loss payment characteristics. Finally, the interest rate might differ depending on the type of financial statement or valuation used.

D. Other Considerations

This paper has concentrated solely on the discounting of loss and loss adjustment expense reserves. However, other balance sheet items would be directly affected if the net loss and loss adjustment expense liabilities were discounted for future investment income. These include the following:

Contingent commissions - In many cases, the current liability for contingent commissions is dependent on loss experience as measured by the current loss reserve. Discounting of loss reserves would then imply that discounting of the contingent commission reserve is a consideration.

Retrospective premium adjustments - Many insurance

and reinsurance contracts have provisions for premium adjustments based on actual loss experience generated under the applicable policies. Discounting of liabilities for such premium adjustments may be an appropriate consideration if the underlying loss reserves are discounted.

Unauthorized reinsurance - Under statutory accounting, reinsurance of loss liabilities with unauthorized reinsurance companies may not, in some situations, be taken as an offset to a company's loss reserves. Discounting of this provision would become a consideration if loss reserve discounting were deemed appropriate for statutory statements.

Adjustments for foreign exchange rates - An adjustment to the insurance company's balance sheet is made for liabilities subject to changes in foreign exchange rates. To the extent that loss reserves are discounted, the issue of future changes in foreign exchange rates becomes a relevant consideration.

As discussed in the Statement of Principles on Loss Reserves, a number of evaluation techniques are frequently used and a range of reasonable full value reserve estimates are often developed. The range concept is equally applicable to the derivation of discounted reserves. Given the two additional components of the discounted reserve evaluation; i.e., payment

timing and interest rates, the range of estimates may be significantly expanded. Determination of the most appropriate estimate can then become a more difficult process under discounting.